



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,147	11/14/2003	Michael D. Bradfield	D-156	2385

7590 03/18/2005

James J. Merrick  
Cantor Colburn LLP  
55 Griffin Road South  
Bloomfield, CT 06002

EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/714,147

Applicant(s)

BRADFIELD ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-13,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-13,15 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6 and 15-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The feature of “permanent magnets...disposed between each segment tooth of each segment...” is new matter. There is nothing in the specification or drawings as originally filed describing permanent magnets disposed between each segment tooth. Claim 7 as originally filed says that the permanent magnets are between each segment, not between each tooth of each segment. Similarly, the recitation in new claims 15 and 16 of “permanent magnets...disposed between said each segment tooth of facing claw pole segments of different flux carrying segments” is new matter as there is nothing in the specification or drawings as originally filed describing this feature.

### *Drawings*

3. The replacement drawing for Fig.2 (sheet 2 of 4) filed 28 February 2005 is objected to and will not be entered because it contains the new matter of permanent magnets (not numbered) between each segment tooth of each segment. See the new matter rejection above. Furthermore,

Art Unit: 2834

the permanent magnets are not numbered in the replacement drawing of Fig.2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

4. The disclosure is objected to because of the following informalities: The permanent magnets disposed between each segment tooth of each segment is not described in the specification, nor are the permanent magnets given reference numbers.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-6, 8-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiga (US 4,418,295) in view of Radomski (US 4,882,515) and Kusase et al. (US

Art Unit: 2834

5,483,116). Shiga teaches an AC motor vehicle generator comprising: a housing 12 defining a drive end 13 and an opposite slip ring end 14 (Fig.1); a stator 15; a rotor 19 rotatable within said stator, said rotor including two flux carrying segments 19a/19b rotatably disposed on a rotor shaft 18 in said housing, each segment having  $P/2$  claw poles (Figs.1-3), wherein  $P$  is an even number (in this case,  $P=12$  since there are six claw poles); and a rotor assembly including two fans 121/214 (Figs.8-9) located adjacent to outbound segments defining said rotor and opposite each other disposed inside said housing and mounted concentric with said rotor shaft (Figs.8-9).

Shiga differs in that there are two flux carrying segments comprising the rotor, not “more than two” as claimed by applicant. Also, Shiga does not teach permanent magnets disposed between each segment tooth of each segment.

Regarding the former feature, Radomski teaches an AC motor vehicle generator comprising: a housing 10/12 defining a drive end (pulley 28) and an opposite slip ring (48/50) end (Fig.1); a stator 14; a rotor 20 rotatable within said stator, said rotor including more than two flux carrying segments (claw pole members) 30/32/34 rotatably disposed on a rotor shaft in said housing, each segment having  $P/2$  claw poles (fingers) 30B/32B/34D/34E (Figs.2-4), wherein  $P$  is an even number (in this case  $P=12$  since there are six claw poles per segment). Radomski provide more than two flux carrying segments because such a double-claw-pole-type rotor provides greater electrical output to the alternator (c.1, lines 31-33 & 45-46; c.5, lines 22-26).

Regarding the latter feature, Kusase teaches a claw pole rotor including facing claw pole segments (cores) 7 each comprising respective plates 13 and 14 and eight magnetic segment teeth (poles) 15 and 16 extending from the outer peripheral side of the plates (Figs.1-2; c.5, lines 18-22). Each segment 7 comprises a “different flux carrying segment” since each segment is

Art Unit: 2834

separate from the other. Permanent magnets 11 are disposed between circumferential side faces of each segment tooth 15/16 of facing claw pole segment (Figs. 1&4; c. 1, lines 9-15). The permanent magnets diminish the magnetic flux leakage between the poles (thus improving output) and improve efficiency (c. 1, lines 12-27).

It would have been obvious to modify Shiga and provide more than two flux carrying segments, i.e., a double-claw-pole rotor, per Radomski since this would have been desirable to provide greater electrical output to the alternator, and it would furthermore have been obvious to modify and provide permanent magnets between each segment tooth of facing claw pole segments of different flux carrying segments per Kusase since the permanent magnets would have improved output and efficiency.

Regarding claims 2-4 and 9-11, note arrows 232a/232b and 240 in Shiga denoting the claimed air flow provided by Shiga's fans 121/214.

Regarding claims 5-6 and 12-13, note windings 40/42 between Radomski's flux carrying segments which alternately magnetize the outbound claw pole members, e.g., 30, from the intermediate member 34.

7. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiga (US 4,418,295) in view of Radomski (US 4,882,515) and Coroller (US 3,459,980). Shiga teaches an AC motor vehicle generator comprising: a housing 12 defining a drive end 13 and an opposite slip ring end 14 (Fig. 1); a stator 15; a rotor 19 rotatable within said stator, said rotor including two flux carrying segments 19a/19b rotatably disposed on a rotor shaft 18 in said housing, each segment having  $P/2$  claw poles (Figs. 1-3), wherein  $P$  is an even number (in this case,  $P=12$  since there are six claw poles); and a rotor assembly including two fans 121/214 (Figs. 8-9) located

Art Unit: 2834

adjacent to outbound segments defining said rotor and opposite each other disposed inside said housing and mounted concentric with said rotor shaft (Figs.8-9).

Shiga differs in that there are two flux carrying segments comprising the rotor, not “more than two” as claimed by applicant. Also, Shiga does not teach permanent magnets disposed between each segment.

Regarding the former feature, Radomski teaches an AC motor vehicle generator comprising: a housing 10/12 defining a drive end (pulley 28) and an opposite slip ring (48/50) end (Fig.1); a stator 14; a rotor 20 rotatable within said stator, said rotor including more than two flux carrying segments (claw pole members) 30/32/34 rotatably disposed on a rotor shaft in said housing, each segment having  $P/2$  claw poles (fingers) 30B/32B/34D/34E (Figs.2-4), wherein  $P$  is an even number (in this case  $P=12$  since there are six claw poles per segment). Radomski provide more than two flux carrying segments because such a double-claw-pole-type rotor provides greater electrical output to the alternator (c.1, lines 31-33 & 45-46; c.5, lines 22-26).

Regarding the latter feature, Coroller teaches a double-claw-pole rotor for an AC automotive generator including permanent magnet 10 sandwiched between pole segments 14 and 15/15' and permanent magnet 10' between pole segments 15/15' and 14' (Fig.2). Use of permanent magnets in combination with exciter coils is described as producing a high power alternator that is still of moderate size (c.2, lines 25-37).

It would have been obvious to modify Shiga and provide more than two flux carrying segments, i.e., a double-claw-pole rotor, per Radomski since this would have been desirable to provide greater electrical output to the alternator, and it would furthermore have been obvious to

Art Unit: 2834

modify and provide permanent magnets between each segment per Coroller since this would have been desirable to produce a high power alternator that is still of moderate size.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-6, 8-13 and 15-16 have been considered but are moot in view of the new ground(s) of rejection. Regarding applicant's argument that Coroller teaches away from the invention, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Coroller teaches that permanent magnets are used in combination with exciter coils to produce a high power alternator that is still of moderate size (c.2, lines 25-37). Despite this design's drawback of having to feed continuous current to the windings, one of ordinary in the art would nevertheless have been aware that permanent magnets in combination with exciter coils would have provided a high power alternator of moderate size.

### ***Conclusion***

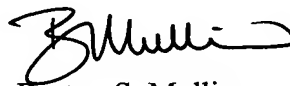
9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



Art Unit: 2834

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins  
Primary Examiner  
Art Unit 2834

bsm  
16 March 2005